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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RIELLEY, ELIZABETH A	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/669,909	GUY, JAMES K.	
	Examiner	Art Unit	
	Elizabeth A. Rielley	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26 and 28-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26 and 28-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Amendment filed 12/7/05 has been entered and considered by the Examiner. Claim 27 is canceled. Currently, claims 1-32 are pending in the instant application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4-9, 11-13, 19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burkarth (US 3703635) in view of Evans (US 1436308).

In regard to claim 1, Burkarth ('635) teaches a reflector body (10; figure 11; column 7 line 13-column 8 line 33), comprising: a curved body portion (10), including: (i) a first inner surface conformable about a first geometric curve (44); (ii) a second inner surface conformable about a second geometric curve (42); (iii) a substantially planar transition region joining the first and second geometric curves, the transition region defining a junction point (the space in front of reflector 40); and a light discharge end of the body portion opening outwardly from the first geometric curve (see figures 8a and 8b) operable to discharge light rays incident on each of the first and second inner surfaces (26). Burkarth ('635) is silent

regarding the limitations of the second geometric curve being smaller than the first geometric curve, a homogenous single piece for the curved body portion, and the junction point preventing the light rays from directly striking the transition region when a source of the light rays is positioned proximate an opposite end of the curved body portion. Evans ('308) teaches the second geometric curve being smaller than the first geometric curve (page2 line 1 to page 3 line 59), a homogenous single piece for the curved body portion having two surfaces conforming to two distinct curvatures (5'; see figure 2; page 3 lines 43-59), and a junction point (not numbered; where 3 meets 8 on figure 1; page 1 line 100 to page 2 line 37) preventing the light rays from directly striking the transition region when a source of the light rays is positioned proximate an opposite end of the curved body portion (due to reflective coating 3' in figure 2; page 3 lines 25-89) in order to project a well defined beam over a long distance (page 1 lines 9-13). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the lamp of Burkarth with the junction point and curved body of Evans ('308). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 2, Burkarth ('635) teaches an outer surface (side of 44 facing 10) conformable about the first geometric curve. Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 4, Burkarth ('635) teaches a plurality of through apertures spaced about the curved body portion (the space located for the arrows 166 and 168; see figure 10); wherein each aperture is formable between the outer surface (44) and the transition area (space in front of 44 for the arrows 166 and 168), and positioned only within the transition area (see figure 10). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 5, Burkarth ('635) teaches that each aperture is oriented normal to the outer surface (166 and 168; see figure 10). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 6, Burkarth ('635) teaches that each aperture may be oriented at an acute angle to the outer surface, the acute angle measurable from a horizontal axis of the reflector (due to the adjustable nature of reflector 44, the aperture caused by the separation of reflectors 42 and 44 would then naturally become angled; see figure 11; column 3 line 25- column 4 line 5). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 7, Burkarth ('635) teaches the first geometric curve (44) being configurable as a first ellipse; and the second geometric curve (42) being configurable as a second ellipse (column 3 lines 25-52; since an ellipse is the formation of two parabola curves), the second ellipse concentrically positionable within the first ellipse (see figure 11) when the ellipse shape is continued past the reflector itself. Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 8, Burkarth ('635) teaches the first geometric curve (44) being configurable as a first parabola; and the second geometric curve (42) being configurable as a second parabola (column 3 lines 25-52), the second parabola concentrically positionable within the first parabola (see figure 11). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 9, Burkarth ('635) teaches each of the first (44) and second (42) inner surfaces comprise a reflective surface (column 3 lines 25-45). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 11, Burkarth ('635) teaches a reflector assembly (see figure 11), comprising: at least one reflector body (10; column 7 line 13 – column 8 line 12) including: (i) an inner cavity (not numbered; see figure 11) including: (a) a first inner surface conformable along a first geometric curve (44); and (b) a second inner surface conformable along a second geometric curve (42); (ii) an outer surface conformable about the first geometric curve (outer surface of 44 on the side of 10); (iii) a substantially planar transition region joining the first and second geometric curves, the transition region defining a junction point (the space in front of reflector 40; see figure 10); a plurality of through apertures spaced about the reflector body (166, 168; see figure 10), each aperture formable between the outer surface and a transition region (166 and 168) between the first inner surface and the second inner surface (see figures 10 and 11); and a coolant flow source (30) directing a coolant toward the at least one reflector body (see figure 11); wherein a first portion of the coolant contacts the outer surface, and a second portion of the coolant is directed by the apertures into the inner cavity (see arrows on figure 11; column 8 lines 26-61). Burkarth ('635) is silent regarding the limitations of a homogenous single piece for the curved body portion. Evans ('308) teaches a homogenous single piece for the curved body portion having two surfaces conforming to two distinct curvatures (5'; see figure 2; page 3 lines 43-59) in order to project a well defined beam over a long distance (page 1 lines 9-13). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the lamp of Burkarth with the junction point and curved body of Evans ('308). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 12, Burkarth ('635) teaches a plenum housing (10; column 7 line 1- column 8 line 12) circumferentially surrounding at least the reflector body (44 and 42), the plenum housing directing the first portion of the coolant about the outer surface (see figure 11). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claim 13, Burkarth ('635) teaches the coolant flow source (30) is aligned with a reflector body (44 and 42) longitudinal centerline, the coolant flow source initially directing the coolant within the plenum housing and substantially parallel to the longitudinal centerline (see figure 11). Motivation to combine would be to improve the projection of a beam over a long distance.

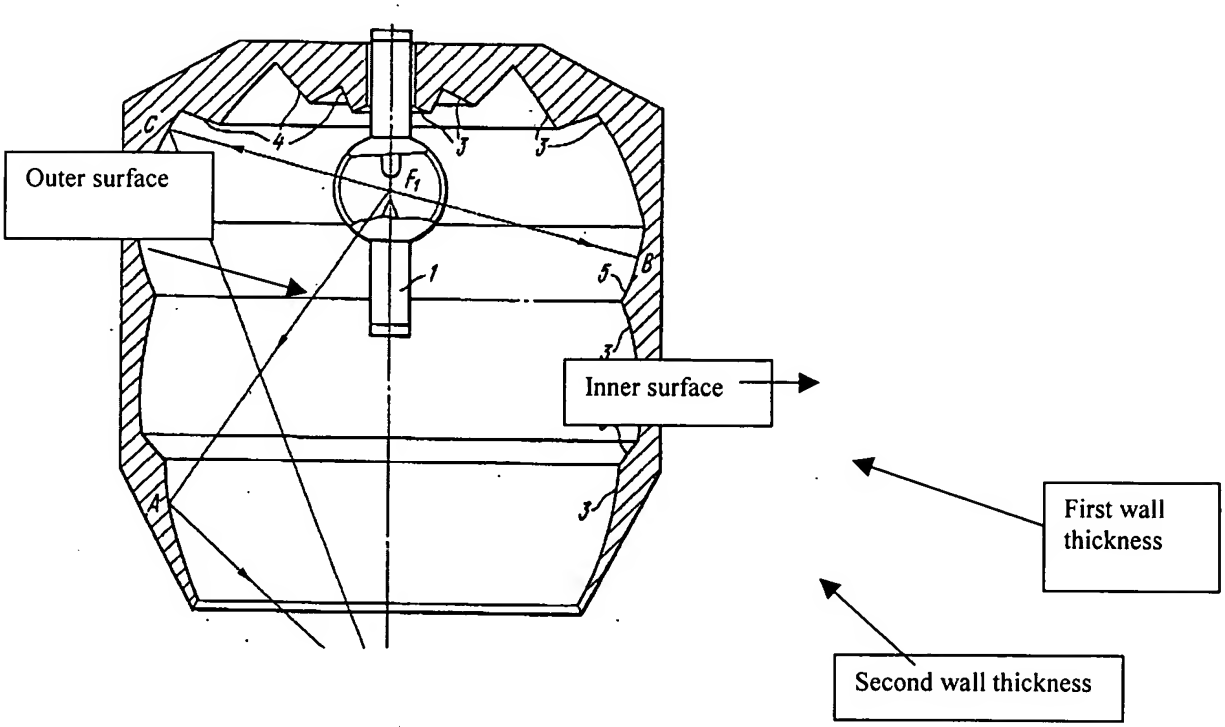
In regard to claim 19, Burkarth ('635) teaches the coolant flow source comprises a fan (30, 80) mountable to the plenum housing (10; see figure 11). Motivation to combine would be to improve the projection of a beam over a long distance.

In regard to claims 22 and 23, Burkarth ('635) teaches the coolant comprises a gas, which is air (column 7 lines 28-43). Motivation to combine would be to improve the projection of a beam over a long distance.

Claims 3 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burkarth (US 3703635) in view of Evans (US 1436308) and in further view of Oparin et al (US 554831).

In regard to claim 3, Burkarth/Evans teaches all the limitations set forth, as described above, except a first wall thickness between the outer surface and the first inner surface; and a second wall thickness between the outer surface and the second inner surface; wherein the second wall thickness is

greater than the first wall thickness. Oparin et al ('831) teach a first wall thickness (5, at the bottom right; figure 1; column 3 line 7 to column 4 line 10) between the outer surface (not numbered) and the first inner surface (5); and a second wall thickness (3, at the bottom right; figure 1) between the outer surface (not numbered) and the second inner surface (3); wherein the second wall thickness is greater than the first wall thickness (see figure 1 below) in order to reduce the thermal load on the reflector walls (column 1 lines 43-55). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector body of Burkarth/Evans with the thickness of the reflector walls of Oparin et al ('831). Motivation to combine would be to reduce the thermal load on the reflector walls.



In regard to claim 21, Burkarth ('635) teaches wherein the junction point (space in front of 44; see figure 10) comprises an aperture (space in front of 44; see figure 10) and internal edge (not numbered; figure 11) of the second inner surface (42) adjacent to each aperture (166, 168; figure 10), wherein any one of a plurality of light rays generated by the arc lamp strikes one of the internal edge (not numbered)

and the first inner surface. Burkarth is silent regarding the limitation of the plurality of light rays generated by the arc lamp entering the apertures. Evans ('308) teaches junction point (not numbered; where 3 meets 8 on figure 1; page 1 line 100 to page 2 line 37) preventing the light rays from directly striking the transition region when a source of the light rays is positioned proximate an opposite end of the curved body portion (due to reflective coating 3' in figure 2; page 3 lines 25-89) in order to project a well defined beam over a long distance (page 1 lines 9-13). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the lamp of Burkarth with the junction point of Evans ('308), thereby avoiding light rays to enter the apertures. Motivation to combine would be to improve the projection of a beam over a long distance.

Claims 10, 14-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burkarth (US 3703635) in view of Evans (US 1436308) and in further view of Walsh et al (US 3515930).

In regard to claim 10, Burkarth/Evans teach all the limitations set forth, as described above, including the curved body is integrally joined to the mount end (16; see figure 11). Burkarth/Evens is silent regarding the mount end containing a non-conductive material. Walsh et al ('930) teach a mount end for a lamp containing a non-conductive material (22) in order to avoid over heating (column 3 lines 30-39). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector assembly of Burkarth/Evans with the nonconductive support of Walsh et al. Motivation to combine would be to avoid over heating the lamp.

In regard to claim 14, Burkarth/Evans teach all the limitations set forth, as described above. Burkarth also teaches a coolant flow source (30, 80) being aligned perpendicular to a common longitudinal centerline of a pair of reflector bodies (42, 44; see figure 11), the coolant flow source

directing the coolant within the plenum housing (10) and initially substantially perpendicular to the common longitudinal centerline (see figure 10, arrows 166, 168). Burkarth/Evans are silent regarding the limitations of a joined pair of reflector bodies that face opposite ends of the light discharge tube. Walsh et al ('930) teach a joined pair of reflector bodies (9; see figure 4) that face opposite ends of the light discharge tube (2; see figure 4) in order to shorten the overall lamp length (column 1 lines 55 to 69). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector assembly of Burkarth/Evans with the reflector locations of Walsh et al. Motivation to combine would be to shorten the overall lamp length.

In regard to claim 15, Burkarth/Evans teach all the limitations set forth, as described above, except a first end having an electrically nonconductive support; and a second open end. Walsh et al ('930) teach a first end having an electrically nonconductive support (22); and a second open end (not numbered; see figure 3) in order to avoid over heating (column 3 lines 30-39). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector assembly of Burkarth/Evans with the nonconductive support of Walsh et al. Motivation to combine would be to avoid over heating the lamp.

In regard to claim 16, Burkarth ('635) teach an arc lamp (26) positionable within the inner cavity (see figure 10).

In regard to claims 17 and 20, Burkarth ('635) teach a first lead wire (74; figure 1; column 4 lines 6-30) electrically connectable to the arc lamp (26) through a support (72); the arc lamp is axially positioned adjacent a support (72) such that the coolant entering the apertures (166, 168; see figure 10) is directed away from a direct impingent path with the arc lamp; and a second lead wire (24; column 2 lines

54-60) electrically connectable to the arc lamp through the open end of the reflector body (see figure 1). Burkarth/Evans are silent regarding the limitation that support in nonconductive. Walsh et al ('930) teach a non-conductive support for the electrode leads (13) in order to avoid over heating the lamp (column 3 lines 19-39). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector assembly of Burkarth/Evans with the nonconductive support of Walsh et al. Motivation to combine would be to avoid over heating the lamp.

In regard to claim 18, Burkarth ('635) teaches bulb mount (22; column 2 line 46 to column 3 line 24) disposed across the open end of the reflector assembly (see figure 1) and supporting the second lead wire (24); and a plurality of coolant flow discharge ports formable in the bulb mount (36).

Claims 24-26 and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burkarth (US 3703635) and in view of Oparin et al (US 554831).

In regard to claim 24, Burkarth ('635) teaches a method to construct a reflector assembly (see figure 11), comprising: forming an inner cavity (not numbered) of a reflector body about concentric geometric curves (44, 42; column 7 line 10 to column 8 line 12); joining the geometric curves by a substantially planar transition region defining a junction point (space in front of 44; see figure 10) creating a plurality of apertures (166, 168; see figure 10) through the transition region (see figure 10); aligning a coolant source (80) with the apertures; and positioning an arc lamp (26) within the reflector body away from a direct impingement path between a coolant entering the apertures and the arc lamp (see figure 11). Burkarth ('635) is silent regarding the limitations of a homogenous reflector body and reducing a reflector body wall thickness in an area local to a light discharge end of the reflector body; and when creating the plurality of apertures (166, 168; see figure 10), the apertures through the reflector body

outside of the area having reduced wall thickness. Oparin et al ('831) teach a homogenous reflector body (see figure 1) and reducing a reflector body (figure 1; column 3 line 7 to column 4 line 10) wall thickness in an area local to a light discharge end (1) of the reflector body (3; see figure 1) in order to reduce the thermal load on the reflector walls (column 1 lines 43-55). When in combination with Burkarth ('635), the apertures of Burkarth ('635), the reflector body of figure 1 would go through the wall to the outside area (not labeled) of the reduced wall thickness. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the reflector body and apertures of Burkarth ('635) with the thickness of the reflector walls of Oparin et al ('831). Motivation to combine would be to reduce the thermal load on the reflector walls.

In regard to claim 25, Burkarth ('635) teaches positioning the plurality of apertures (via 44) such that a plurality of light rays from the arc lamp completely reflect out of the light discharge end and are precluded from directly entering the apertures (abstract).

In regard to claim 26, Burkarth ('635) teaches positioning the plurality of apertures on a common arc transposed about the outer wall (see figure 11; column 3 line 45 to column 4 line 5).

In regard to claim 28, Burkarth ('635) teaches forming a first inner wall along a first ellipse (44); and creating a second inner wall about a second ellipse (42), the second ellipse locatable concentrically within the first ellipse (see figure 11).

In regard to claim 29, Burkarth ('635) teaches forming a first inner wall about a first parabola (44); and creating a second inner wall about a second parabola (42), the second parabola locatable concentrically within the first parabola (see figure 11).

In regard to claim 30, Burkarth ('635) teach positioning the arc lamp (26) along a longitudinal centerline of the reflector body (see figure 11).

In regard to claim 31, Burkarth ('635) teach joining a pair of reflector bodies (44, 42) along a common longitudinal centerline (not labeled; see figure 11).

In regard to claim 32, Burkarth ('635) teach enclosing the reflector body within a plenum housing (10); and connecting the coolant source to the plenum housing (30, 80; see figure 11).

Response to Arguments

Applicant's arguments filed 12/7/05 have been fully considered but they are not persuasive. In regard to Applicant's arguments that the Prior Art of Record fails to disclose (i) a homogenous single piece of curved body portion; (ii) a second geometric curved being smaller than the first geometric curve; (iii) a substantially planar transition region joining the first and second geometric curves, the transition region defining a junction point; (iv) the junction point preventing the light rays from directly striking the transition region when a source of the light rays is positioned proximate an opposite end of the curved body portion; (v) a non-conductive material mount end; and (vi) each aperture is positioned within the transition area, the Examiner respectfully disagrees due to the following: (i) Both Oparin and Evans teach a homogenous single piece of curved body portion (see figures 1 and 2, respectively); (ii) Evans teaches a second geometric curve of a lamp reflective body being smaller than the first geometric curve (page 2 lines 1-35) in order to produce a more well defined beam; (iii) Burkarth teaches joining the geometric curves by a substantially planar transition region defining a junction point (space in front of 44; see figure

10); (iv) Evens teaches the junction point preventing the light rays from directly striking the transition region when a source of the light rays is positioned proximate an opposite end of the curved body portion (page three lines 43-59; see figure 2) in order to produce a more well defined beam; (v) Walsh teaches an electrically non-conductive support (22) in order to avoid over heating the lamp; and (vi) Burkarth teaches each aperture is positioned within the transition area (space in front of 44; see figure 10).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Rielley whose telephone number is 571-272-2117. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elizabeth Rielley

Elizabeth Rielley

Examiner
Art Unit 2879

2/20/06

MARICELI SANTIAGO
PRIMARY EXAMINER